



Question(s)

Name and describe 2 external factors which affect climate change

Answer(s)

Solar Output – variations in amount of energy given off by sun – sunspots can affect solar output – e.g. reduction in sunspot activity between 1645-1715 likely cause of Little Ice Age

Orbital Geometry – earth's orbit of the sun varies in shape – when circular glacial periods have occurred, when elliptical warmer periods result (Milankovitch Cycles)

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Question(s)

Describe how volcanic activity can affect global climate change

Answer(s)

Volcanic Dust puts huge amounts of ash and sulphur dioxide in the atmosphere – acts to block out solar radiation and can cause a decrease in global temperatures.

e.g. Laki eruption – Iceland 1783 – reduced global temperatures and led to harvest failing in W Europe.

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Question(s)

Describe the main changes in global climate since the end of the last ice age.

Answer(s)

Temperatures have increased by 6°C since last ice age

- There have been fluctuations with warmer and colder periods
- 8,000-4,000 years ago – 2 warmer periods with cold spell in between
- 1450-1850 – Little Ice Age
- Since 1960s rapid increase in temperature

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Question(s)

How does surface reflection affect global temperatures?

Answer(s)

Different types of surface have a different albedo – capacity of surface to reflect radiation.

Lighter surfaces – e.g. snow and ice reflect large amounts of radiation back to space (high albedo) – reduces temperatures.

Reduction in snow and ice – less sunlight reflected back and temperatures warm

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Question(s)

What is the name given to the cycles of orbital geometry?

Answer(s)

Milankovitch Cycles

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Question(s)

Describe how orbital geometry (including the tilt of the axis and the nature of the orbit) can affect climate change.

Answer(s)

Earth's orbit varies approx every 95,000 years – when circular leads to glacial periods, when more elliptical orbit – warmer periods.

Title of axis varies between 21.5-24.5° – greater angle of tilt – warmer periods occur

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Question(s)

Give two examples of Greenhouse Gases.

Answer(s)

Any of:

1. Chloroflurocarbons
2. Carbon Dioxide
3. Nitrous Oxide
4. Methane

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Question(s)

Give two sources of:
(i) Methane
(ii) Carbon Dioxide

Answer(s)

Methane sources:

Wetlands, paddy fields, landfills, burning vegetation, bowels of cattle and sheep

Carbon Dioxide sources:

Burning of fossil fuels (coal, oil and gas) – in power stations and from car exhausts

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Question(s)

Why are levels of methane and carbon dioxide increasing?

Answer(s)

Methane Increasing: *increase in population (particularly LEDCs) – increase demand for rice to feed expanding population and an increase in western style diets (more cattle & sheep raised for meat); also rising temps see release of methane from permafrost.*

Carbon Dioxide Increasing: *increased energy use due to greater population and increase in electrical goods (due to greater wealth); also greater transport demands (inc. Flying and greater car ownership).*

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Question(s)

Give the two major reasons for rising sea levels.

Answer(s)

1. Melting of ice caps due to increased temperatures
2. Thermal expansion of water as temperatures rise.

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Question(s)

Give three negative effects of climate change.

Answer(s)

Could include:

1. Retreating glaciers
2. Sea level rise
3. Reduction in crop production in some areas

(there are others – see revision guide and you should also know specific examples)

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Question(s)

Why is international co-operation essential to tackle the problem of climate change?

Answer(s)

Once released into the atmosphere, the greenhouse gases that cause Global warming spread far and wide affecting everyone. Therefore actions taken by individual countries will not be successful unless countries work together to reduce their gas emissions.

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Question(s)

Name, and give the dates of two international meetings held to tackle the problem of climate change.

Answer(s) **Any of...**

Kyoto Climate Conference (Japan) – led to Kyoto Protocol – 1997

Earth Summit – Rio – June 1992

Copenhagen (Denmark) – Sept 2009

Bali Conference – Dec 2007

New York Summit – Dec 2009

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Question(s)

In what year was the Kyoto protocol signed?

Answer(s)

1997

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Question(s)

What is meant by an NGO? Give an example of an NGO involved in tackling the issue of Climate Change.

Answer(s)

An NGO is a non-governmental organisation – an example tackling climate change is **Greenpeace**

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Question(s)

Give examples of what we do as a school to try and reduce our carbon footprint / be more environmentally friendly.

Answer(s)

May include...

- Working with GEO (energy reduction company) – monitoring energy use in classrooms
- Recycling bins in every classroom
- Energy club and “energy consultants”
- Signed up with the Carbon Trust and 10:10 initiative looking at heating and electricity use
- Turned down thermostats and restricted heating times.

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Question(s)

What is meant by our carbon footprint?

Answer(s)

A measure of the impact our activity has on the environment and in particular on climate change. It is **a measure of all the greenhouse gases we individually produce in our day to day lives** and has units of tonnes (or kg) of CO₂ equivalent.

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Question(s)

Give examples of what the local council are doing to try and tackle the problems of climate change.

Answer(s)

Example: Huntingdonshire District Council

- Signed up to 10:10 campaign to work to cut carbon emissions in county by 10%
- Greenhouse (Ecohouse) project – in St Ives
 - o Solar power panels on roof
 - o Rainwater harvesting
 - o Triple glazing etc. (to encourage public to see ways in which they can reduce energy use in homes
 - o Recycling bins and subsidised home compost bins.

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Question(s)

What is meant by the term **sustainable development**?

Answer(s)

Development that meets the needs of the present without compromising (limiting) the ability of future generations to meet their own needs.

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Question(s)

Give a named example of a company involved in the communications industry that is working towards improving their impact on the environment. Give examples of what they are doing.

Answer(s)

EXAMPLE: NOKIA

- Substance management – reduce amount of substances of concern in making mobiles – use more environmentally friendly materials – e.g. bio-plastics
- Energy efficiency – reduce energy consumption in manufacturing and ensuring devices are more energy efficient.
- Take back and recycling scheme – encourage handing in of old phones (recycle up to 80% of the materials) – “Recycle your mobile campaign”

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Question(s)

What is the name of Marks and Spencer's sustainable development policy? Explain what it involves.

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Answer(s)

PLAN A

- 5 main areas with 100 targets over 5 years to work towards sustainability.
- Climate Change – e.g. reduce energy consumption in stores / inc. Use of renewable energy
- Waste – aim to reduce amount of packaging and carrier bags.
- Sustainable raw materials – improve standards in animal welfare – e.g. free range Turkeys and more Organic Clothing goods
- Fair Partner – work to improve livelihoods of supplies / communities
- Health – reduce salt / fat content etc. www.geobytesgcse.wordpress.com

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Question(s)

How successful has Marks and Spencer's sustainable development policy (Plan A) been?

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Answer(s)

Already very successful – success include:

- New electric lorries
- Teardrop 'eco-lorries' – emit 20% less CO₂
- Reduce packaging and most now fully recyclable
- Cut number of swing tickets
- Charge for carrier bags
- M&S and Oxfam Cloth exchange (enc. Recycling)
- Many garments made from fair-trade goods
- Supports communities abroad – e.g. Uganda – 15,000 children now have better education
- Eat well logos on food packs

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Question(s)

Describe the ways in which a hotel could reduce its carbon footprint.

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Answer(s)

Encourage people not to change towels daily
Booking online / email confirmation (reduce paper / printing waste)

Any other possible examples accepted

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Question(s)

Give three ways in which businesses can reduce their carbon footprint and be more sustainable.

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Answer(s)

Could include:

- More energy efficient production techniques
- Encourage customers and staff to recycle
- Encourage employees to reduce own emissions (e.g. using bus / cycle to work)
- Use of internet / email (cut paper/printing)
- Reduction of unnecessary packaging

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Question(s)

Give two examples of **sustainable transport management**.

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Answer(s)

1. London Congestion Charge
2. Guided Bus System – St Ives
3. Park and Ride - Cambridge

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Question(s)

For a named example of a Park and Ride system describe its aim and how it works. (5 marks)

Answer(s)

Cambridge Park and Ride

Provides parking for shoppers in safe car parks (CCTV monitored) on edge of town. Parking free – just pay for bus – cuts pollution and reduces number of cars entering city.

Cambridge – has 5 park and ride sites close to major routes into Cambridge – e.g. Madingley Road (just off M11)

4,500 parking spaces available in total – costs £2.20 a day to use

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Question(s)

Explain what is meant by the congestion charge and what its aim is.

Answer(s)

If drivers use designated central area of a city (e.g. London) – have to pay a daily charge – began in London in 2003 – aim to reduce congestion, reduce pollution and encourage greater use of public transport

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Question(s)

Give two examples of areas of Tropical Rainforest

Answer(s)

Amazon Rainforest Brazil

Indonesia

West Africa

Fold along here



Question(s)

Name and briefly explain the type of rainfall that occurs in Tropical Rainforest

Answer(s)

Convictional Rainfall – due to daily high temperatures – creates large amounts of evapotranspiration – moisture rises, cools and condenses forming frequent rainfall

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Question(s)

Describe the climate of a Tropical Rainforest

Answer(s)

Lack seasons – year round temperatures between 30-35°C

Rainfall totals – high all year (above 2,000mm/yr) – with rain falling every day

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Question(s)

Describe the global distribution of Tropical Rainforests

Answer(s)

Tropical rainforests are located around the equator and in between the Tropics of Cancer and Capricorn. Examples include the Amazon Rainforest - Brazil

Fold along here



Question(s)

Name the four main layers of vegetation found in the Tropical Rainforest.

Answer(s)

1. Emergent Trees (up to 50m in height)
2. Canopy
3. Under Canopy
4. Shrub Layer

Fold along here



Question(s)

Describe the ways in which vegetation has adapted to life in the Tropical Rainforest.

Answer(s)

May include....

- Large leaves in shrub layer – to collect as much sunlight as possible
- Dense mat of roots to collect nutrients as litter layer decomposes
- Large buttress roots to support tall trees
- Lianas use trees to grow up to get sunlight

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Question(s)

Describe how the Tropical Rainforest nutrient cycle works.

Answer(s)

All year round growing season, resulting in rapid uptake of nutrients throughout the year. As leaves die they fall to ground. Rapid decomposition occurs (due to wet and hot conditions) forming humus which releases nutrients in the soil which are rapidly up taken.

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Question(s)

What is meant by a fragile environment? Give two examples of a fragile environment.

Answer(s)

An environment which is easily disturbed by human activity

1. Tropical Rainforests
2. Tundra Regions

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Question(s)

Explain why the Tropical Rainforest can be seen as a fragile environment.

Answer(s)

Rainforest vegetation is strongly adapted to the climate and has a tight cycle of nutrients. If vegetation is removed the source of nutrients is gone. The soils in the rainforest are poor and with no nutrient cycling they rapidly become infertile and soil erosion occurs. Cutting down the trees can alter the rainfall patterns. Changes to the nutrient and water cycle make it difficult for the vegetation to recover.

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Question(s)

Using named examples, outline the main causes of Rainforest Destruction.

Answer(s)

May include...

- Logging** – e.g. Cameroon – commercial wood production – e.g. Local Baka work in soil mills and Naka pigmies employed to show logging companies best trees.
- Oil Extraction** (Ecuador) – e.g. in the oriente region
- Mining** e.g. for iron ore and gold – such as in the Amazon region of Brazil (e.g. Carajas Iron Ore mining project)
- Extract Natural Gas** – e.g. gas project in Camisea region of Peru

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Question(s)

What are the main impacts of Tropical Rainforest Destruction?

Answer(s)

- Loss of Biodiversity and reduction in habitats (e.g. due to oil extraction in Ecuador)
- Plants with medicinal properties e.g. rosy periwinkle becoming endangered.
- Increased air pollution (CO₂) as areas of forest burnt
- Soil and aquatic pollution – e.g. in Amazon – River Tapajos – highly toxic mercury polluted waterways – found in fish and in turn affected people
- Locals exploited / health affected – e.g. Baka pigmies working in sawmills (Cameroon) – breath in toxic products.

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Question(s)

Name an example of an NGO working in the Tropical Rainforest and describe an example of what it does.

Answer(s)

The Nature Conservancy – helps indigenous people develop the forest sustainably e.g.:

- Training centres such as one in Manaus (opened in 2006) to train local people how to manage their area and taught about natural resource management
- “Ethnomapping” – satellite images used to identify areas where illegal logging, hunting etc. – used to help locals plan out use of area.

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Question(s)

Using specific examples, name and describe **five** examples of sustainable rainforest management.

Answer(s)

May include amongst others.....

1. Merck (USA company) allowed to look for plants with medical properties in Costa Rica – governments get a share of profits)
2. Small scale forestry – seek out naturally fallen trees – dragged out by buffalo (minimise destruction)
3. Inter-cropping – grow crops between trees of the rainforest (e.g. Bananas and cocoa) – sold as organic produce.
4. Eco-tourism – e.g. Costa Rica – trails set up and locals act as guides
5. Governments taking stand – e.g. French Guiana – Kaw mountain area – French government refused a gold mine.

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Question(s)

Give examples of medicines derived from Rainforest plants.

Answer(s)

Rosy Periwinkle – used in treatment of Leukaemia

Quinine – used in battle against Malaria

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Question(s)

Describe how changes in the shape of the earth's orbit will affect the world's climate.

Answer(s)

Circular orbit leads to colder periods and more elliptical orbit leads to warmer periods

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Question(s)

Define the following:

- Global Warming
- Climate Change

Answer(s)

Global Warming – an increase in the temperature of the earth's atmosphere

Climate Change – a long term change in average temperature

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Question(s)

Explain in detail how the Greenhouse Effect works.

Answer(s)

Heat energy from the sun in the form of shortwave radiation enters the atmosphere and energy is reflected back from earth's surfaces. Some energy escapes, but much of the longwave radiation is trapped by greenhouse gases in the atmosphere and reflected back, warming the atmosphere. The more greenhouse gases, the more heat energy trapped and climate continues to warm.

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Question(s)

What is meant by a Greenhouse Gas? Give 3 examples of Greenhouse Gases.

Answer(s)

A gas which traps heat energy in the atmosphere e.g.

1. Chlorofluorocarbons
2. Carbon Dioxide
3. Methane
4. Nitrous Oxide

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Question(s)

The USA signed the Kyoto protocol but did not implement it - why?

Answer(s)

The Kyoto protocol was signed when Bill Clinton was in power. When George Bush took over the presidency he withdrew USA from the protocol before it was legally binding. Withdrew on the basis that the major developing economies and indeed all countries had the right to grow their economies (Bush concerned that some developing countries not expected to cut emissions like developed countries)

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Question(s)

Describe the aims of the Kyoto protocol and evaluate how successful it was.

Answer(s)

Aims: produce legally binding commitments to reduce greenhouse gases and establish an adaptation fund for climate change to help minimise impacts on LICs.

Success? – signed by 178 countries agreeing to cut emissions by 5.2% of 1990 levels by cutting emissions or trading in carbon credits. However USA backed out when Bush came to power.

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Question(s)

Give one example of a major volcanic eruption that has impacted on the earth's climate in the past.

Answer(s)

Either:

Laki – Iceland (1783) or Mount Tambora (1815)

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Question(s)

Describe four negative effects of global warming for the UK

Answer(s)

May include:

- Insufficient snow for winter sports in Scotland
- Sea defences in coastal areas likely to cost greater than £10 billion due to increased erosion
- Valuable low-lying farmland lost in fens
- Thames Barrier become ineffectual – flooding of Houses of Parliament
- More pests / diseases in south due to mild winters.

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Question(s)

Using examples describe three positive effects of global warming for the UK.

Answer(s)

May include:

1. Higher yields of potatoes, sugar beet and tomatoes due to warmer temperatures.
2. Increased length of growing season in Scotland
3. Mediterranean style summers in the south
4. Warm enough for vines and peaches to be grown in the south.

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